

# CRITERIA FOR THE PRODUCTION OF CONTINENTAL PHYSICAL MAPS

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## **Abstract**

Since two years ago the Relief Material Group of the Spanish Braille Commission (CBE) has undertaken a research study with visually impaired users to set up the basic criteria for the production of accessible continental physical maps with their respective interpretation guides. This study has been based on prototypes of the Europe physical map and has been evaluated by 118 Spanish blind or visually impaired users. The map presented in this Conference is the final map and includes the main observations made by visually impaired users.

**Keywords:** Accessible physical maps, interpretation guide, texture and reliefs and chromatic contrast.

## **1. Introduction**

One of the main aims of the Relief Material Group of the ONCE Spanish Braille Commission is the production of relief and color maps to be used by both blind/visually impaired people and sighted people.

After the successful experience obtained with continental political maps, the main goal of this working group is the production of physical maps.

## **2. Research**

A sample of 118 users from several Spanish cities with different vision degrees have evaluated two prototypes of Europe physical maps with relief and color. The following features were evaluated: several types of relief and textures applied to the most important physical elements (rivers, mountains, seas, straits or islands).

Braille print quality, large print, chromatic contrast between different elements and of course, relief were also tested. Besides, a prototype of an interpretation guide for this map both in Braille and large print has also been evaluated. The most important results included in the final version of the physical map of Europe will be presented in this Conference and in the interpretation guide to be published soon.

### **3. General Features of the map.**

The general features of the physical map are as follows:

- Dimensions: 60 cm x 45 cm.
- Use of different colors, relief heights and textures to represent elements such as: mountains, seas, rivers, valleys, etc.
- Use of abbreviations and texts with bigger fonts and Braille system.

### **4. Production technique.**

- Map font: Digital elevation model (DEM).
- PVC color serigraphied sheet.
- Relief master (Polyester resin) and Computer Numerical Control (CNC) milling machine.
- 300 micron PVC sheet (Thermoform).

#### **Height range**

- Oceans, seas and lakes: 0 mm.
- Continents: 2.5 mm.
- Rivers: 4 mm.
- Mountain areas: Up to 15 mm.

### **5. Conclusions**

#### **a) Visual features**

- Mountains: different shades of brown color (at higher altitude, darker colors).
- Rivers: dark blue color.
- Oceans, seas and lakes: light blue color.
- Deserts: not evaluated.
- Lowlands, plains, valleys and woods: different shades of green color according to altitude.
- Keys and abbreviations: black color, Arial font size 32.

#### **b) Tactile features**

- Mountains: relief according to height.
- Rivers: continuous raised line.
- Seas, oceans and lakes: horizontal and raised line texture.
- Deserts: not evaluated.

- Lowlands, plains, valleys and woods: pointed relief depending on the altitude.
- Keys and abbreviations: Braille according to the Spanish Braille Commission parameters.

**c) Interpretation guide**

- Braille text. Braille dot height 0.5 mm.
- Large print text. Arial font size 14
- Braille parameters: Spanish Braille Commission (CBE)

**CAPTIONS**

- TACTILE MAP MASTER
- VISUAL MAP DESIGN
- TACTILE AND VISUAL PHYSICAL MAP
- Interpretation Guide